

EXPOSITION OPENS MAY 1, 1893. EXPOSITION CLOSES OCT. 30, 1893

BUILDING TO BE COMPLETED AND DEDICATED OCT. 12, 1892.

EXHIBITS RECEIVED FOR INSTALLATION NOV. 1, 1892.

WORLD'S COLUMBIAN EXPOSITION

CHICAGO, U. S. A.

1893.

CLASSIFICATION

AND

RULES.

DEPARTMENT OF

MINES, MINING, AND METALLURGY,

With other information for intending Exhibitors.

OFFICE:—RAND-MCNALLY BUILDING,

160-174 ADAMS STREET, CHICAGO

GEO. R. DAVIS,
Director-General.

F. J. V. SKIFF,
Chief of Department.

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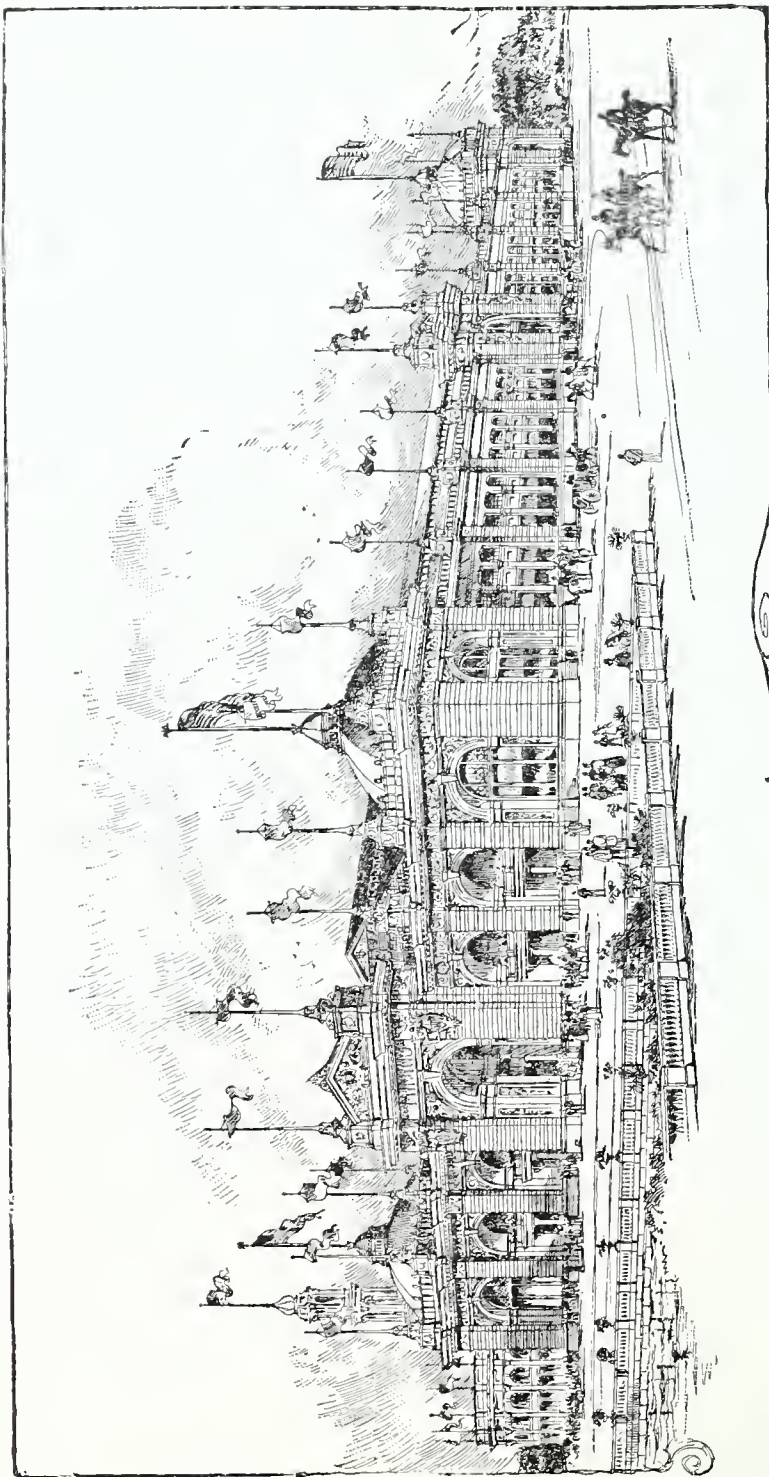
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MINES AND MINING BUILDING.

The Mines and Mining Building.

The Mines and Mining Building is located on the south bank of the Great Lagoon that encircles the Wooded Island. Its companion buildings are Transportation and Electricity, which adjoin it respectively on the west and east. The Administration Building is directly to the south.

The Mining Building opens out upon the beauties of the landscape arrangement of which the Wooded Island with its inspiring scenic effects is the center. It faces the elaborate grounds surrounding and contiguous to the Administration Building with its lofty golden dome, presenting a vista extending out upon the closely associated buildings dedicated to the different arts, and sciences, and emblematic of the trades professions, etc., and beyond to and over the Great Basin, which leads to the Harbor and the Casino in the mid-lake.

The building, being located mid-way between the two great buildings erected to Transportation and Manufactures and adjacent to both those devoted to Electricity and Machinery, occupies a central position, which will demand the observation and visitation of all who enter the spacious grounds. It possesses a great advantage by reason of the centrality of its location. Not only is it flanked by Electricity on the east, and by Transportation on the west—two exceedingly attractive departments—but it is also equidistant from the great Manufactures and Agricultural Halls.

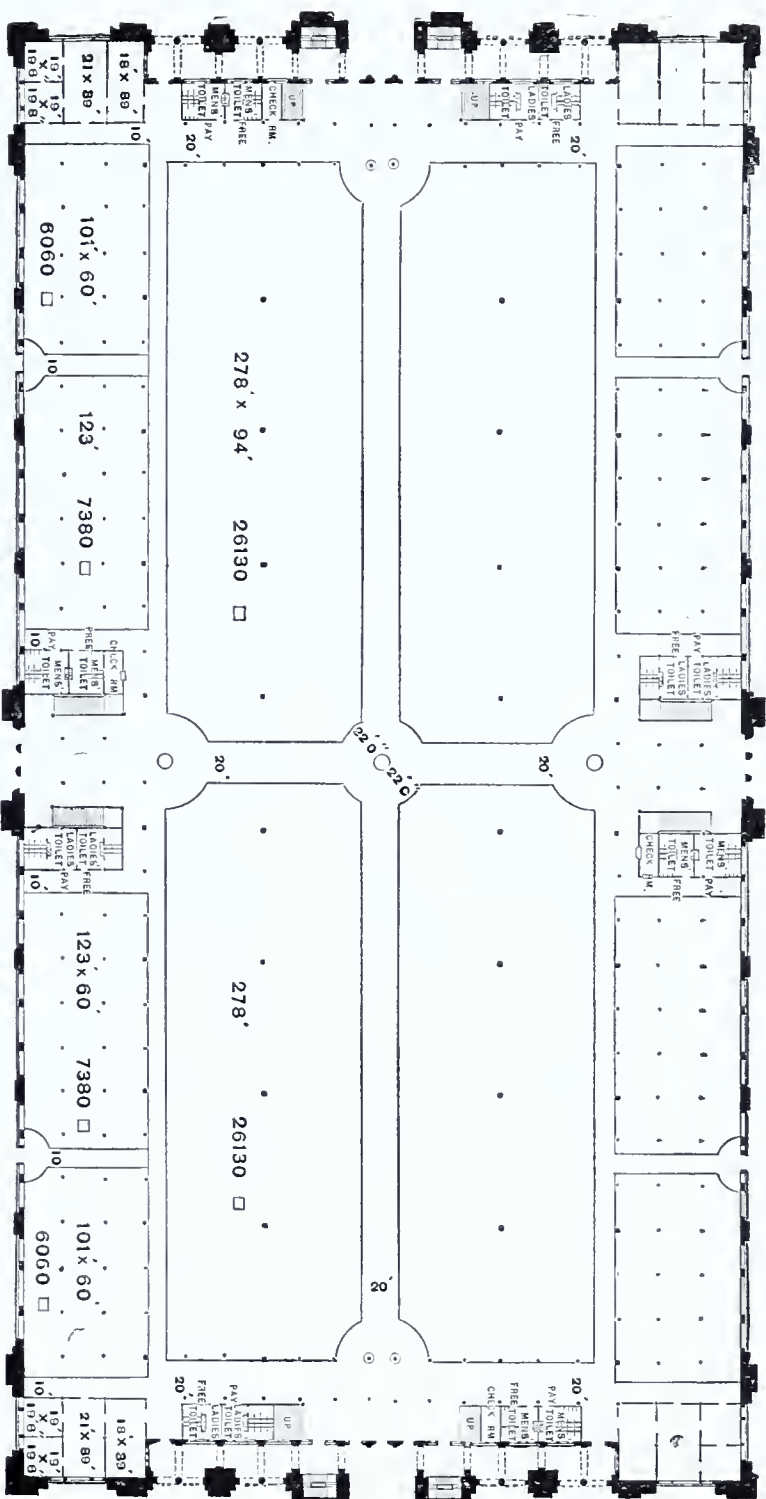
The structure is, in many respects, one of the handsomest and most ornamental of the departmental buildings. Its architecture and its inspiration is in the early Italian Renaissance, but the subject has been liberally treated. In plan the Building is simple. It is, in area, 350x700 feet, and its elevation from the floor to the cornice line is 65 feet. There are four great entrances to the Building, imposing in dimen-

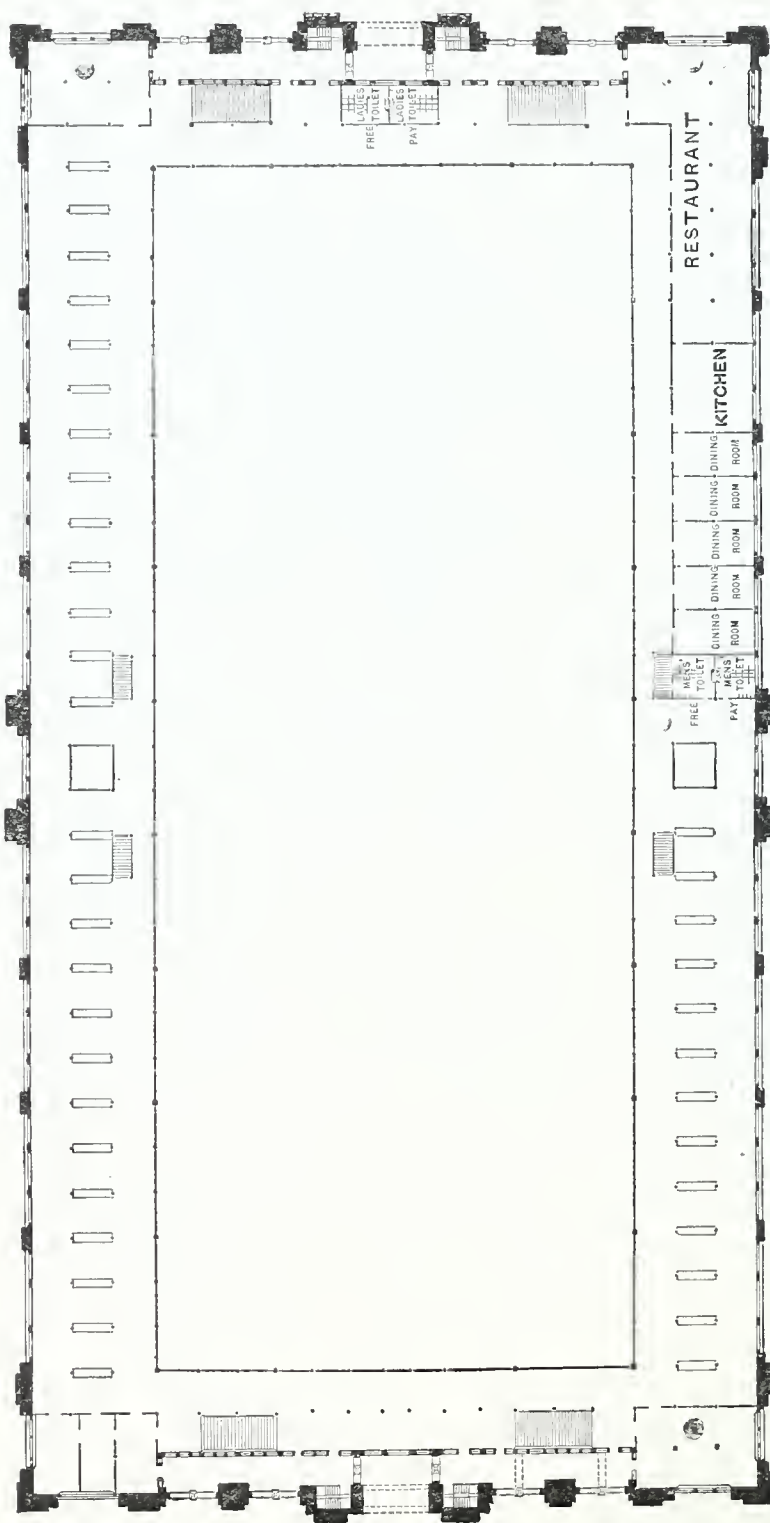
sion and elaborate in design. The North and South entrances are 88 feet wide, with openings 32 feet wide and 56 feet high. On either side, immense pilasters, reaching upward 62 feet to the top of the banner staff, give the structure a massive and solid appearance.

The principal fronts are embellished with sculptural and decorative designs emblematic of Mining and its allied industries. At each end of these fronts are large square pavilions, surmounted with domes which mark the four corners of the building and are lighted by large arched windows. Between the main entrances and the pavilions are decorated arcades, forming an open loggia on the ground floor, and a deep recessed promenade on the gallery floor level. These covered promenades are each 25 feet wide and 230 feet long and from them access is had to the Building at various points. The loggias on the first floor are faced with marble of different kinds. The loggia ceilings will be heavily coffered and decorated. The ornamentation of the Building is massed at the prominent points of the facade. The exterior presents a massive yet graceful appearance. The long sides of the Building are treated in a simpler manner than the fronts. Large segmental windows extend through the galleries and are placed between the broad piers affording an abundance of light to the space beneath.

The interior is spanned by steel cantilever roof trusses supported on steel columns placed 65 feet apart longitudinally, and 115 feet and 57 feet transversely, thus leaving a clear space in the center of the Building 630 feet long and 115 feet wide, with the side divisions each 57 feet wide and 630 feet long. This central space is encumbered only with 16 steel posts. The cantilevers are of pin connection. Their inner and higher ends are 46 feet apart and the spaces between them are spanned by riveted steel trusses with an elliptical lower chord. These trusses are designed so as to form a clear story twelve feet high with a vertical sash extending the entire length of the space, 630 feet, said space terminating at each end with a great glass gable setting back sixty feet from the front ends of the Building.

A great portion of the roof is covered with glass, and it is





GALLERY PLAN.

the only building of the Exposition Group, excepting the large domes, that has steel roof trusses.

The ground floor of the building is divided into four grand sections by broad aisles, extending from north to south and from east to west. In the center of the building, whence the main avenues radiate, a circular court is provided, in which an imposing design will be elevated, emblematic of the industry to which the building is dedicated, and similar designs, models, monuments, and appropriate figures will face the four entrances to the building. Spacious vestibules, restaurants, toilet-rooms, reading-rooms, lounging-rooms, etc., for the comfort and convenience of the visitors, are provided for in different parts of the building.

The gallery is sixty feet wide and twenty-five feet above the main floor. It extends entirely around the building, and affords a floor space of 103,000 square feet. Eight broad stairways lead from the main, or lower floor, to the gallery, two from each of the ends and sides of the building. This gallery opens out into numerous loggias, from which a fine view of the spacious grounds and parks and surrounding buildings can be obtained.

Numerous apartments have been provided for the literary collections, which will be placed at the disposal of the Department, and rooms for laboratory work, libraries, literature, pictures, photographs, drawings, charts, etc., with other convenient rooms for the examination of the display of relief models, etc., are contemplated in different portions of the gallery.

A library effect will be given the arrangement on this floor by placing the cabinets back to back, the gallery being intended for the more scientific display of minerals, both precious and economic, precious stones, economic geology, etc. Visitors will pass down broad walks upon either side, and through alcoves formed by the cabinets.

The power provided for the Mining Building will be concentrated at convenient points in the building for its distribution on the ground floor, where demonstration will be undertaken. The building will be brilliantly illuminated by electricity, the arc lamps being of great power and ranged in semi-circular groups, while thousands of incandescent lamps will add to the brilliancy of the effect at night.

The Building devoted to mines, mining and metallurgy, when finally opened to the public arranged in minute detail and sweeping possibility, will unquestionably prove not only the point at which the practical and scientific miner, geologist, inventor and manufacturer will assemble, but it will be also a resort of abiding interest and general instruction for all classes of people.

SCOPE OF THE DEPARTMENT OF MINES AND MINING.

By the employment of the expression, "products of the soil, mine and sea," in the enacting clause of the Act of Congress, providing for the World's Columbian Exposition, mining was raised to an industrial rank that previous expositions had denied it. At Paris, at London, and at Vienna, the mineral exhibit was permitted to occupy a single court or meagre sections, and was comprehended within one group of the general classifications. At the Centennial Exposition, while the exhibit was larger in area than those of Paris and at London yet it was not deemed of sufficient importance to be placed in a separate building adapted to the purpose, but was located in an annex added to the Industrial building.

Under the scope and plan of the Columbian Exposition, and under the classification provided for guidance in installation, many of the branches of the mining industry, heretofore incorporated in other departments, will be placed in their legitimate and natural positions in the Mining building.

Inspection of the classification of Department "E," Mines and Mining, gives some adequate idea of the variety of the exhibits comprehended. The raw material, the natural product, to be exhibited in the Mining Department, will constitute the basis of every other exhibit made, except that of Agriculture and Horticulture. The groundwork of all the arts and sciences and the mechanical industries will be contemplated within the walls of the structure dedicated to Mines, Mining and Metallurgy. All of the precious minerals, all of the economic minerals, all of the precious stones, all of the coals, all of the building stones and marbles, all of the clays and sands, all of the salts and pigments, as well as the machinery, implements and appliances employed in their conversion to the uses of man, will be fully represented.

The subject of coal will be treated on very broad lines. It would be impossible to accept for exhibition purposes all the

really meritorious specimens of coal that can be secured, for the purpose of demonstrating the resources of the country in this great fuel. The treatment must be comprehensive and sweeping, and the display based upon the distribution of the great coal fields that stand out prominently in the geology of the country. The coal industry is of gigantic proportions, involving the investment of many millions of dollars and the employment of hundreds of thousands of people. The display of coal at the Exposition will be qualitative rather than quantitative. The different varieties of coal produced by the different localities will be shown, together with the chemical analysis of each and the results of tests determining economic value and adaptability to various uses. The coal resources of countries, States and sections will be shown by geological maps and drawings, exhibiting the stratification, cross-section, etc., which will render apparent the extent and accessibility of the vast number of coal beds and veins which underlie the earth's surface.

As regards iron, efforts will be made to have an adequate exhibit of that great branch of industry. Without considering the contributions that will be made to this division by foreign governments, this country, which is now the first nation in the world in iron production, will provide a display of the greatest interest and benefit to the manufacturing world. The development of the iron resources of the Southern United States within the past few years, no less than the attention which has been devoted to this particular industry in the West in the same period, surrounds this product with national interest. It is intended to arrange this exhibit with the fullest appreciation of the magnitude and importance of the iron industry, with ample data as to the location and extent of the greater deposits, the analyses of the ores, with all the machinery and devices employed in mining, hoisting, conveying, storing, etc. Statistics, not only based upon the operations of the past, but in a degree indicating the extent to which they may be carried on in the future, will constitute a valuable feature of this division.

Every provision has been made for the installation of the ores of both the precious and base metals and cabinets of mineral specimens contributed by private individuals, asso-

ciations and technical and mining schools. These will be arranged with conspicuous care as to detail. States, nations, individuals, collectors and colleges will vie with one another in endeavors to establish the superiority of their respective collections, or to demonstrate the value of certain mineral countries, sections, or lands. Every ingenious device and design will be utilized by the several States, Territories and countries to illustrate the magnitude of their deposits.

The division of mining machinery will demonstrate the usefulness and economy of every character of mechanical equipment. Every device, invention, tool and appliance employed in the great industry will be fully represented, either by an exhibit of the full-sized plant or by working models. The entire plant of smelting and refining works and the heavy machinery used in crushing and separating ores will be in operation. A complete series of metallurgic processes from mineral to metal will be installed.

The extensive apparatus and tools employed in the great petroleum and natural gas industries will be amply exhibited, with oils and bi-products. No group will be of greater interest or of more practical value than that which illustrates the extent and method of the gigantic operations in this division of the mineral kingdom.

Plans for and the best methods of equipping assay offices will be presented and illustrated. Melting and scorification furnaces, with muffles, cupels, etc., with melting pots and fluxes handy for the production of the assayer's "button," volumetric and other test methods, rolls and small crushers for preparing test lots of ores, the most delicate instruments of precision—these and the associated appliances of metallurgy will be exposed for the edification and instruction of the visitor.

Marbles, agates, jaspers, onyx, silicified wood, etc., will be offered for the inspection of the architect and decorator. Numerous machines and tools for channelling, sawing, lifting, turning and polishing granites, sandstone, marble, etc., will be collected for the purpose of demonstrating the facility with which great masses of stone are transformed into useful and ornamental objects and made suitable for the most skilled handicraft.

Sands for the manufacture of glass, many-colored clays, and kaolin of all grades for the potter, brick-maker, porcelain worker, etc., polishing substances, whetstones, hones, and emeries, will constitute a group of unusual interest to both the student and manufacturer. Asphaltic and cement mixtures and artificial stones, which have made the pavements of Paris and of the Capitol of our own country superb in their cleanliness and the admiration of the world, will be illustrated in all their multifarious uses.

The salt mines of the Old World, and the brines and other salt workings of our own country will contribute their quota of this snowy, crystalline product. Adding to the color effect and interest of the exhibit will be variegated heaps of nitrates, sulphates, borates, pigments of all kinds, ochres and vermilions, phosphates, coprolites and every variety of mineral fertilizers. In another group the useful graphite, with the methods by which it is transformed for use in the shape of leads, crayons, lubricants, etc., will be exposed.

Ingots, bars, and castings of white aluminum, with aluminum alloys, will be found in juxtaposition with pigs and bars of reddish copper. Tin ores and block tin, sheet and bar zinc, ingots of nickel, specimens of bismuth, antimony, arsenic and other metals with their ores and alloys will be arranged in a manner confusing in diversity, yet artistically and scientifically disposed.

In the mining machinery section will be shown every species of apparatus, simple and complex, employed in working a mine from the lowest drift to the dump. Methods of timbering, ventilating and lighting the various slopes, levels, and galleries will be shown by examples. Trams, hoists, and automatic dumps, engines for pumping, rock breakers, screens, grizzlies and other sizing appliances will attract the inspection of the visitor and instruct in the greatest of all industries. Improved diamond drills and contrivances for loading and unloading ores and for their storage, automatic stevedores for transference on the surface, patent self-emptying cars, wire ropeways with their outfits of buckets, etc., coal tipples, steam shovels, belt conveyors, etc., etc., will complete the methods by which the stupendous mining operations of the present age are conducted.

For the purpose of practical study, the division of History and Literature of Mining and Metallurgy will be unsurpassed. To this end, college faculties and professional men are already pledged. Every facility will be afforded for examining in detail the geology and distribution of minerals and ore-bearing rock. The rich literary stores, maps, models, etc., of the leading educational institutions of the land, will present to the student who visits this great repository at the Columbian Exposition, an unexampled opportunity for considering the entire subject of historical and statistical mining. Mine engineering will be adequately represented by surveys and plottings, by projections of underground work and models, and by literature descriptive of the methods of running shafts, tunnels, construction of mine workings and the handling of ores.

An elaborate and accurate reproduction of ancient and unique mining and metallurgical methods, appliances, tools and processes as illustrating the evolutions in the industry, will attract the attention of all classes, and teach fruitful lessons in the advance of science, invention and general civilization.

When the exhibits in the Department of Mines, Mining and Metallurgy shall have been properly collected, classified and arranged, the department will be a comprehensive and complete exposition of all the great mineral treasures of the earth and the methods employed in their search, their treatment, and their usage.

DEPARTMENT E.

MINES, MINING, AND METALLURGY.

GROUP 42.

MINERALS, ORES, NATIVE METALS, GEMS AND CRYSTALS.
GEOLOGICAL SPECIMENS.

Class 290. Collections of minerals systematically arranged.

Class 291. Collections of ores and the associated minerals.
Diamonds and gems, rough, uncut and
unmounted. Crystallography

Specimens illustrating the formations of the
earth, systematically arranged.

GROUP 43.

MINERAL COMBUSTIBLES—COAL, COKE, PETROLEUM, NATURAL
GAS, ETC.

Class 292. Coal—Anthracite, semi-bituminous and bitumi-
nous; coal waste, "slack," coke and pressed coal.

Class 293. Asphaltite and asphaltic compounds—Uintaite,
wortzilite, grahamite, albertite, bitumen, mineral
tar, amber.

Class 294. Petroleum—Illuminating and lubricating oil.

Class 295. Natural gas—Methods of conveying and using.

GROUP 44.

BUILDING STONES, MARBLES, ORNAMENTAL STONES AND QUARRY
PRODUCTS.

Class 296. Building stones, granites, slates, etc., rough hewn,
sawed or polished—For buildings, bridges,
walls, or other constructions, or for interior
decoration, or for furniture.

Marble, white, black, or colored.—Stalagmitic marbles, onyx, brecciated marbles, silicified wood, agates, jaspers, porphyries, etc., used in building, decoration, statuary, monuments, vases, or furniture.

GROUP 45.

GRINDING, ABRADING, AND POLISHING SUBSTANCES.

Class 297. Grindstones, hones, whetstones, grinding and polishing materials, sand, quartz, garnet, crude topaz, diamond, corundum, emery in the rock and pulverized, and in assorted sizes and grades.

GROUP 46.

GRAPHITE AND ITS PRODUCTS; CLAYS AND OTHER FICTILE MATERIALS AND THEIR DIRECT PRODUCTS; ASBESTOS, ETC.

Class 298. Crude graphite, in blocks and in powder.

Class 299. Graphite and compounds for coating iron.

Class 300. Graphite lubricants.

Class 301. Electrotypers' graphite.

Class 302. For pencils, crayons, etc.

Class 303. Graphite crucibles, and melting pots.

Class 304. Clays, kaolin, sillex, and other materials for the manufacture of porcelain faience, and of glass, bricks, terra cotta, tiles, and fire-brick; various examples.

Class 305. Refractory stones for lining furnaces, sandstone, steatite, etc., and refractory furnace materials. Mica; kidney, sheet or ground.

Class 306. Bauxite clay for the manufacture of aluminum.

Class 307. Asbestos, crude and manufactured.

Class 308. Meerschäum.

GROUP 47.

LIMESTONE, CEMENTS, AND ARTIFICIAL STONE.

- Class 309. Lime, cement and hydraulic cement, raw and burned, accompanied by specimens of the crude rock or material used; also artificial stone, concrete, beton.
Specimens of lime mortar and mixtures, with illustrations of the processes of mixing, etc.
Hydraulic and other cements.
- Class 310. Beton mixtures and results, with illustrations of the processes.
- Class 311. Artificial stone for building purposes, building blocks, cornices, etc. Artificial stone mixtures for pavements, walls, or ceilings.
- Class 312. Asphaltic mastics and mixtures, asphaltic sand, asphaltic limestone.
- Class 313. Gypsum, crude and boiled, calcareous; plasters, mastics, etc.

GROUP 48.SALTS, SULPHUR, FERTILIZERS, PIGMENTS, MINERAL WATERS,
AND MISCELLANEOUS USEFUL MINERALS AND COMPOUNDS.

- Class 314. Salt from beds or from brines.
- Class 315. Nitre and other nitrates.
- Class 316. Sulphates, alums, and other salts.
- Class 317. Sulphur and pyrites for the manufacture of sulphuric acid.
- Class 318. Boracic acid and its salts; borax.
- Class 319. Pigments, iron oxides, ochres, vermilion, etc.
- Class 320. Mineral fertilizing substances, gypsum, phosphate of lime, marls, shells, coprolites, etc., not manufactured. (For commercial fertilizers and compounds, see Group 17.)

- Class 321. Mineral waters, artesian well water (for commercial forms, as bottled and as beverages, see Group 10); natural brines, saline and alkaline efflorescences and solutions.

GROUP 49.

METALLURGY OF IRON AND STEEL, WITH THE PRODUCTS.

- Class 322. Ore mixtures, fluxes, and fuels.
Class 323. Blast furnaces—stacks, stoves, blowing apparatus and arrangement.
Class 324. Pig-iron, cast-iron, and mixtures.
Class 325. Cupola furnaces.
Class 326. Direct processes—Sponge and blooming plant and apparatus.
Class 327. Puddling—Furnaces and appliances.
Class 328. Bessemer machinery—Details and arrangements.
Class 329. Basic process and apparatus.
Class 330. Open-hearth steel—Plant and apparatus.
Class 331. Crucible steel—Plant and apparatus.
Class 332. Nickel steel.
Class 333. Manganese iron and steel, chrome steel, aluminum steel, tungsten steel, other forms of steel.
Class 334. Iron and steel. Bars, rods, sheets, wire.

GROUP 50.

ALUMINUM AND ITS ALLOYS.

- Class 335. Aluminum, pure and commercial; ingots, castings, bars, rods, wire, sheets, and partly manufactured.
Class 336. Aluminum alloys.
Class 337. Aluminum alloy wire and wire-cloth.
Class 338. Process for the extraction of aluminum; electric reduction and results.

GROUP 51.

COPPER AND ITS ALLOYS. METALLURGY.

- Class 339. Native copper, and the methods of extracting, melting, and refining it.
- Class 340. Copper ores and their treatment by fire. Copper smelting. Pneumatic process. Converter system.
- Class 341. Copper extraction in the "wet" way.
- Class 342. Copper in ingots, bars, and rolled, with specimens illustrating its various stages of production. Copper and zinc. Brass industry, and products regarded as materials of manufacture.
- Class 343. Copper and aluminum, aluminum bronze.

GROUP 52.

METALLURGY OF TIN, TIN-PLATE ETC.

- Class 344. Tin ores and their treatment.
- Class 345. Block tin and its extraction from tin ore.
- Class 346. Tin-plate and methods of cleaning and coating iron and steel plates.

GROUP 53.

METALLURGY OF ZINC, NICKEL AND COBALT.

- Class 347. Production of spelter.
- Class 348. Sheet and bar zinc.
- Class 349. Production of zinc oxide.
- Class 350. Nickel in ingots, bars, rods, sheets and wire.
- Class 351. Nickel-covered steel and iron by rolling.
- Class 352. Nickel "plating."
- Class 353. Nickel salts.
- Class 354. Special nickel alloys, as German silver, etc.
- Class 355. Nickel steel. (See Class 332.)

GROUP 54.

METALLURGY OF ANTIMONY AND OTHER METALS NOT SPECIFICALLY
CLASSED.

- Class 356. Crude and star antimony.
- Class 357. Antimony compounds and principal alloys.
- Class 358. Arsenic, white arsenic, orpiment, and realgar.
- Class 359. Bismuth and alloys. Quicksilver and amalgams.

GROUP 55.

EXTRACTION OF GOLD AND SILVER BY MILLING.

- Class 360. Gold mills and accessories.
- Class 361. Silver mills and accessories.
- Class 362. Apparatus and accessories of amalgamation;
handling quicksilver.
- Class 363. Retorting, melting, stamping, shipping bullion.

GROUP 56.

EXTRACTION OF GOLD AND SILVER BY LIXIVIATION.

- Class 364. Roasting and chloridizing furnaces.
- Class 365. Chlorination process and adjuncts.
- Class 366. Other processes.

GROUP 57.

EXTRACTION OF GOLD, SILVER, AND LEAD BY FIRE.

- Class 367. Furnace plant and appliances.
- Class 368. Lead bullion molds and bars.
- Class 369. Refining operations.

GROUP 58.

QUARRYING AND WORKING STONE.

- Class 370. Quarrying, channeling, and cutting engines.
- Class 371. Derricks and fittings.
- Class 372. Slate-cutting, sawing, and planing machines.

- Class 373. Machines and apparatus for cutting, turning, and polishing marble, granite, and other stone.
(See Group 78.)

GROUP 59.

PLACER, HYDRAULIC, AND "DRIFT" MINING.

- Class 374. Apparatus and machines for washing gravel; sluices, cradles, toms, rockers, riffles, etc.
Class 375. Construction of ditches, flumes, pen-stocks, etc.
Class 376. Pipes for conveying water.
Class 377. "Giants," nozzles, and appurtenances.

GROUP 60.

TOOLS AND APPLIANCES OF UNDERGROUND MINING, TIMBERING AND SUPPORTING.

- Class 378. Timber cutting and framing machines.
Class 379. Methods of timbering shown by examples.
Class 380. Underground chutes, gates, and appliances for delivering ores. Methods and appliances for ventilating, lighting and signaling.

GROUP 61.

BORING AND DRILLING TOOLS AND MACHINERY, AND APPARATUS FOR BREAKING OUT ORE AND COAL.

- Class 381. Picks, gads, and hammers.
Class 382. Hand-drills, hammers, and blasting implements.
Class 383. Drilling by steam or compressed air,—“power drills.”
Class 384. Diamond drills for prospecting or for sinking and driving.
Class 385. Well and shaft boring (various systems).
Class 386. Boring for water, oil, or gas—tools and methods.
Class 387. Machines, apparatus and implements for cutting coal.

GROUP 62.

PUMPS, ENGINES AND APPARATUS USED IN MINING FOR PUMPING,
DRAINING AND HOISTING.

GROUP 63.

MOVING, STORING AND DELIVERING ORES, COALS, ETC.

- Class 388. Tramways, turn-tables, automatic hoisting and conveying on the surface, contrivances for loading and unloading ores and coal.
- Class 389. Cars of all kinds.
- Class 390. Automatic dumping.
- Class 391. Ore bins and appliances.

GROUP 64.

APPARATUS FOR CRUSHING AND PULVERIZING.

- Class 392. Rock breakers.
- Class 393. Rolls.
- Class 394. Large stamps.
- Class 395. Stamps and mortars.
- Class 396. Revolving grinding mills.
- Class 397. Coal breakers.

GROUP 65.

SIZING APPLIANCES.

- Class 398. Grizzlies and bar screens and sieves.
- Class 399. Perforated plates.
- Class 400. Wire-mesh sieves and trammels.
- Class 401. Sizing by currents of water or air. Overflows.
- Class 402. Sizing by belts.

GROUP 66.

ASSAYING APPARATUS AND FIXTURES.

- Class 403. Plans of assay offices.
- Class 404. Furnaces, muffles and appliances.
- Class 405. Scorification and cupelling.

- Class 406. Volumetric methods and apparatus.
 Class 407. Fluxes and their receptacles.
 Class 408. Assay balances, etc. (See Group 112.)
 Class 409. Assay tables, assay schemes and methods

GROUP 67.

HISTORY AND LITERATURE OF MINING AND METALLURGY.

- Class 410. Maps, relief-models and pictures to illustrate the geology and distribution of minerals and mines and the methods of working mines.
 Class 411. History and statistics of mines and mining districts.
 Charts, diagrams and tabular representations.
 Statistics of mineral production.
 Class 412. Mine engineering—surface and underground surveying and plotting, projection of underground work, location of shafts, tunnels, etc.; surveys for aqueducts and for drainage.
 Boring and drilling rocks, shafts and tunnels, etc.; surveys for aqueducts and for ascertaining the nature and extent of mineral deposits.
 Construction—Sinking and lining shafts by various methods, driving and timbering tunnels and the general operations of opening, stoping and breaking down ore; timbering, lagging and masonry.
 Hoisting and delivering at the surface, rock, ore or miners; pumping and draining by engines, buckets or by adits.
 Ventilating and lighting.

GROUP 68.

ORIGINALS OR REPRODUCTIONS OF EARLY AND NOTABLE IMPLEMENTS AND APPARATUS USED IN MINING AND METALLURGY.

TRAFFIC ARRANGEMENTS.

A very large amount of work has already been done by the Traffic Department in the line of arranging for the proper transportation of exhibits and the securing of reduced rates on the same. Material reductions have been made by all of the leading railway lines of the country. In announcing the concessions thus far secured, it may be generally stated that full tariff rates will be charged on exhibits on the forward journey, the same being returned free to point of shipment via the same route first used, and provided the ownership of the goods exhibited remains unchanged. Freight charges must be prepaid at the point of shipment, the goods being delivered at the Exposition clear of all charges incident to the transportation.

The maximum charge for removing, storing and returning empty cases, and packing material for exhibitors who request it, will be as follows:

For empty cases and packing material without insurance, two (2) cents per cubic foot.

For empty cases and packing material with insurance, two and one-half ($2\frac{1}{2}$) cents per cubic foot. Neither these storage rates nor the terminal charges referred to below are definitely determined. It is hoped both may be modified.

An elaborate system of tracks within the grounds minimize the difficulty and labor of handling exhibits of a heavy or cumbersome character. Tracks of standard gauge will be constructed into the center of the mines and mining building, so that bulk is not broken until the consignment is finally unloaded on the exhibition space.

The following schedule of current class rates in effect at the present time between the principal seaboard ports and Chicago (subject to change) are:

From	1st. Class.	2d. Class.	3d. Class.	4th. Class.	5th. Class.	6th. Class.	A	B	C	D
New York.	75	65	50	35	30	25				
Philadelphia.	69	59	48	33	28	23				
Baltimore.	67	57	47	32	27	22				
Boston.	75	65	50	35	30	25				
Portland, Me.	65	57	44	31	26	22				
Newport Nws.	59	51	43	29	25	20				
Montreal.	65	57	44	31	26	22				
New Orleans.	1.18	98	78	61	50	44				
San Francisco.	4.20	3.70	2.95	2.30	2.00		2.00	1.80	1.45	1.30
Portland, Ore.	4.20	3.70	2.95	2.30	2.00		2.00	1.80	1.45	1.30

To the above class rates there will be added a sum not to exceed eight cents per 100 pounds. This is a terminal charge covering the switching of exhibits into the Exposition grounds from the point of intersection with the Illinois Central Railroad, and the placing of exhibits on or adjacent to the space allotted.

The railroad classification of the material with which the department of Mines and Mining has to deal covers such an extensive range that, without going more into detail than is the purpose of this pamphlet, only a general idea of the cost of shipping mining machinery and products can be given. As classified by both Eastern and Western lines, mining specimens are considered fourth-class freight. Ores, not mineral specimens, also come under the same head. Machinery of various kinds is graded from "double first" down to "fourth class."

GENERAL RULES AND REGULATIONS.**WORLD'S COLUMBIAN EXPOSITION.**

- RULE 1. Exhibitors will not be charged for space. A limited amount of power will be supplied gratuitously. This amount will be settled definitely at the time space is allotted. Power in excess of that allotted gratuitously will be furnished by the Exposition at a fixed price. Demands for such excess must be made before the allotment of space.
- RULE 2. Any single piece or section of any exhibit of greater weight than 30,000 pounds will not be accepted if machinery is required for its installation.
- RULE 3. Exhibitors must provide, at their own expense, all show-cases, cabinets, shelving, counters, fittings, etc., which they may require, and all counter-shafts, pulleys, belting, etc., for the transmission of power from the main shafts.
- RULE 4. Exhibitors will be confined to such exhibits as are specified in their application. When the allotment of space is definitely made, exhibitors will be notified of their allotment of space and its location, and will be furnished with a permit to occupy the same, subject to the general rules and regulations adopted for the government of the Exposition and the special rules governing the Department in which their exhibit will be made. Permits for space will not be transferable.
- RULE 5. Special rules will be issued governing each Department and the sale of articles within the buildings or on the grounds, but no articles shall be

sold for removal previous to the close of the Exposition, unless a concession or privilege for the same has been granted by the Committee on Ways and Means. "Privileges" refer to the sale of such goods as are manufactured in order to illustrate a machine or process exhibited. "Concessions" refer to the sale of all goods and operation of attractions from which the securing of revenue is the sole object of the lessees. The removal of exhibits will not be permitted prior to the close of the Exposition.

RULE 6. Decorations, signs, dimensions of cabinets, shelving, counters, etc., and the arrangement of exhibits must conform to the general plan adopted by the Director-General.

RULE 7. Reasonable precautions will be taken for the preservation of exhibits, but the World's Columbian Exposition will not be responsible for any damage to, or for the loss or destruction of an exhibit resulting from any cause.

RULE 8. All packages containing exhibits intended for the several Departments must be addressed to the "Director-General, World's Columbian Exposition, Chicago, Illinois, U. S. A." In addition, the following information must be written on the outside of each package:

- (a) Department in which exhibit is to be installed.
- (b) The State or Territory from which the package comes.
- (c) The name and address of the exhibitor.
- (d) The number of the permit for space.
- (e) Total number of packages sent by the same exhibitor. The serial number must be marked on each package and a list of the contents enclosed in each package. Freight must be prepaid.

- RULE 9. Favorable terms will be arranged by which exhibitors may insure their own goods. Exhibitors may employ watchmen of their own choice to guard their goods during the hours the Exposition is open to the public. Such watchmen will be subject to the rules and regulations governing employés of the Exposition; but no exhibitor will be permitted to employ attendants or assistants for service in any building, except upon written consent of the Chief of the Department.
- RULE 10. The expense of transporting, receiving, unpacking and arranging exhibits, as well as their removal at the close of the Exposition, shall be paid by the exhibitor.
- RULE 11. If no authorized person is at hand to take charge of exhibits within a reasonable time after arrival at the Exposition buildings, they will be removed and stored at the cost and risk of whomsoever it may concern.
- RULE 12. The installation of heavy articles requiring foundations should, by special arrangement with the Chief of Construction, begin as soon as the progress of the work on the buildings will permit. The general reception of articles at the Exposition buildings will commence November 1st, 1892, and no article will be admitted after April 10th, 1893. Space not taken possession of April 1st, 1893, will revert to the Director-General for re-assignment.
- RULE 13. If exhibits are intended for competition it must be so stated by the exhibitor, or they will be excluded from examination for award.
- RULE 14. The Chief of each Department will provide cards of uniform size and character, which may be affixed to exhibits, and on which will be stated only the exhibitor's name and address, the name of the object or article exhibited, and its catalogue number.

- RULE 15. Articles that are in any way dangerous or offensive, also patent medicines, nostrums and empirical preparations whose ingredients are concealed, will not be admitted to the Exposition.
- RULE 16. Exhibitors' business cards and brief descriptive circulars, only, may be placed within such exhibitor's space for distribution. The right is reserved by the Director-General to restrict or discontinue this privilege whenever it is carried to excess, or becomes an annoyance to visitors.
- RULE 17. The chief of each Department, with the approval of the Director-General, has the power to order the removal of any article he may consider dangerous, detrimental to, or incompatible with the object or decorum of the Exposition, or the comfort and safety of the public.
- RULE 18. Exhibitors will be held responsible for the cleanliness of their exhibits and the space surrounding the same. All exhibits must be in complete order each day, at least thirty minutes before the hour of opening. No work of this character will be permitted during the hours the building is open to the public. In case of failure on the part of any exhibitor to observe this rule, the Chief of the Department may adopt such means to enforce the same as circumstances may suggest.
- RULE 19. Sketches, Drawings, Photographs or other reproductions of articles exhibited will only be allowed upon the joint assent of the exhibitor and the Director-General; but general views of portions of the interiors of the buildings may be made on the approval of the Committee on Ways and Means.

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- RULE 20. Immediately after the close of the Exposition, exhibitors must remove their effects, and complete such removal before January 1st, 1894. Goods then remaining will be removed and disposed of under the direction of the World's Columbian Exposition.
- RULE 21. An official catalogue will be published in English, French, German and Spanish. The sale of catalogues is reserved exclusively by the Exposition Company.
- RULE 22. Each person who becomes an exhibitor thereby agrees to conform strictly to the rules and regulations established for the government of the Exposition.
- RULE 23. Communications concerning applications for space, and negotiations relative thereto, should be addressed to the "Director-General, World's Columbian Exposition, Chicago, Illinois, U. S. A.
- RULE 24. The management reserves the right to construe, amend or add to all rules and regulations whenever it may be deemed necessary for the interest of the Exposition.

(Signed) GEORGE R. DAVIS,
Director-General.

STATE EXHIBITS.

THE WORLD'S COLUMBIAN EXPOSITION,

OFFICE OF DIRECTOR-GENERAL,

CHICAGO, May 5, 1891.

In answer to many inquiries as to the matter of domestic exhibits and the establishment and maintenance of separate State exhibits at the World's Columbian Exposition, the following regulations have been adopted by the National Commission and the Board of Directors :

First.—All exhibits intended to be competitive and within the jurisdiction of juries or committees authorized to award prizes must be located in some one of the general Exposition buildings, and be grouped according to the official classification, except such exhibits as can only be properly and advantageously displayed in the grounds; provided, however, that this exception shall only operate in those cases where, in the judgment of the Director-General, he shall deem it expedient to grant the express permission.

Second.—Each of the States of the Union, the Territories, and the District of Columbia, shall be entitled to erect and maintain, on the Exposition grounds, a building for the use of State, Territory, or District of Columbia (or two or more States or Territories, if so desired, may erect and maintain a building in common), and each State or Territory desiring to erect such a building (or two or more proposing to erect a building to be used in common) shall, through their official representatives or their State World's Fair Boards, file with the Director-General an application, in writing, for ground space for such building, and, as soon as possible, give a general description of the character and style of the building proposed to be erected, and the sum of money appropriated for the construction thereof; and after the ground space shall have been allotted, as hereinafter provided, and before any occupation thereof, there shall be filed with the Chief of the

Bureau of Construction detailed plans and specifications for each such proposed building, and when such plans and specifications shall have been approved by the Chief of the Bureau of Construction and by the Director-General, a permit to erect the building shall be issued by the last named officer.

Third.—That, preparatory to the assignment of ground space for State buildings, the Director-General, after conference with, and the concurrence of, the Grounds and Buildings Committee of the Exposition, shall cause the States and Territories of the Union to be grouped in such manner as shall appear most likely to produce the best results to the Exposition as a whole, and shall allot suitable ground space to each of such groups; and after such allotment shall have been made, the space in each allotment shall be again properly subdivided so as to provide suitable independent location for each such State or Territory (or any two or more of them desiring a location in common), and the location of each individual State or Territory (or any two or more of them desiring a location in common) within the territorial space assigned to that group wherein they are included shall be determined in the order of their application; subject, however, to harmony of grouping of buildings, which shall be determined by the Chief of the Bureau of Construction and the Director-General.

Fourth.—That correct plans and specifications for every State Building, as approved by the Chief of the Bureau of Construction and the Director-General, shall, before the issuance of the permit, be filed in the office of the Director-General and Chief of the Bureau of Construction, and be preserved as a record of the Exposition.

Fifth.—That, in the construction of such State buildings, each State or Territory may use such material or materials produced in such State or Territory as the State Board shall determine, with a view of promoting a full exhibition of the structural materials produced in such State or Territory.

Sixth.—Such State buildings shall be maintained as a State or Territorial headquarters, under the control of the State Board, but subject to the rules and regulations governing the Exposition, for the convenience and entertainment of resi-

dents of the particular State or Territory, and the reception and entertainment of their friends and such guests as they may invite to share the hospitality of such State or Territory; and shall also, if desired by the State or Territory, be used as a depository for a collective exhibit of such a line as shall best illustrate and exemplify the natural resources of such State, as well as its historical and archæological features. Each such collective State exhibit shall, however, be installed and maintained only subject to the following conditions, limitations and restrictions, to-wit :

(a) These exhibits shall not be catalogued, nor considered as competitive, or at all entitled to participate in prizes or awards, nor be within the jurisdiction of the committees or juries of award.

(b) They shall embrace no manufactured goods nor products.

(c) No processes shall be included therein, and no motive power permitted in any such building.

GEORGE R. DAVIS,
Director-General.

SPECIAL RULES AND REGULATIONS.

DEPARTMENT OF MINES, MINING, AND METALLURGY.

1. Space granted to an exhibitor may be utilized in such manner as the exhibitor may determine. But before permits to occupy allotted spaces are issued, full detailed information, describing the proposed exhibit, showing general design, elevation, construction, decorations, material to be used, etc., must be submitted to the Chief of the Department for approval.

2. No exhibit shall be more than twenty feet in height, except by consent of the Chief of the Department.

3. Partitions must not exceed twelve feet in height.

4. Platforms must be ten inches high, no more nor less.

5. Railings must be three feet in height from the floor.

6. All covered spaces must be open, at least in front, and supports or columns must not exceed twelve feet in height.

7. No portion of the flooring of the Building can be removed or cut into by exhibitors except by special permission of the Chief of the Department.

8. Exhibitors of mining machinery or processes must be either the manufacturer or inventor of said machinery and processes, but the manufacturer or inventor may specially appoint an agent to make such exhibit, such appointment to be certified to and endorsed by the Director-General.

9. All exhibits of machinery in motion must be enclosed by a railing not less than three feet in height from the floor, and no machinery in motion can be located within three feet of any aisle or passageway.

10. The power provided for the Mines and Mining Build-

ing will be electricity and compressed air. Electric, air, gas, water, and sewer mains will be laid by the Exposition. All connections for power, water, or sewerage, must be made at the expense of the exhibitor.

11. Space for raw material used in demonstration will require a special permit, and all product or refuse resulting from such demonstration must be removed each day.

12. All mineral in cabinets must be plainly labeled, giving at least the scientific name and the locality of the specimen.

13. All ores must have affixed or attached thereto information as to the character of the specimen, location of deposit, and rough analysis. Such other data as will be of interest to the public, may be given at the discretion of the exhibitor.

14. All coals must bear a card or tag, giving variety and tests and location of mine and output.

15. All building stones must bear a card or tag, giving popular name and tests and location of quarry.

16. No piece of ore or coal shall exceed three feet in diameter, except by special permission of the Chief of the Department.

17. Exhibits of building and ornamented stone must be in cubes, and should not be more than one foot square; one side at least must be finished.

18. Upright cabinets, to conform to general design, should have a base one foot high, a glass front six feet in height, a six-inch cornice, be one foot in depth and either five or ten feet in width. A preferable size for flat cases is four by five feet, one foot deep.

19. Slabs of marble, onyx, etc., whether rough or polished, pavement slabs, artificial stone, set cement, tiling, etc., must not exceed four feet square, in superficial dimensions.

20. Permits for space will not be transferable.

21. Safety vaults can be secured for the safekeeping and protection of exhibits of unusual value.

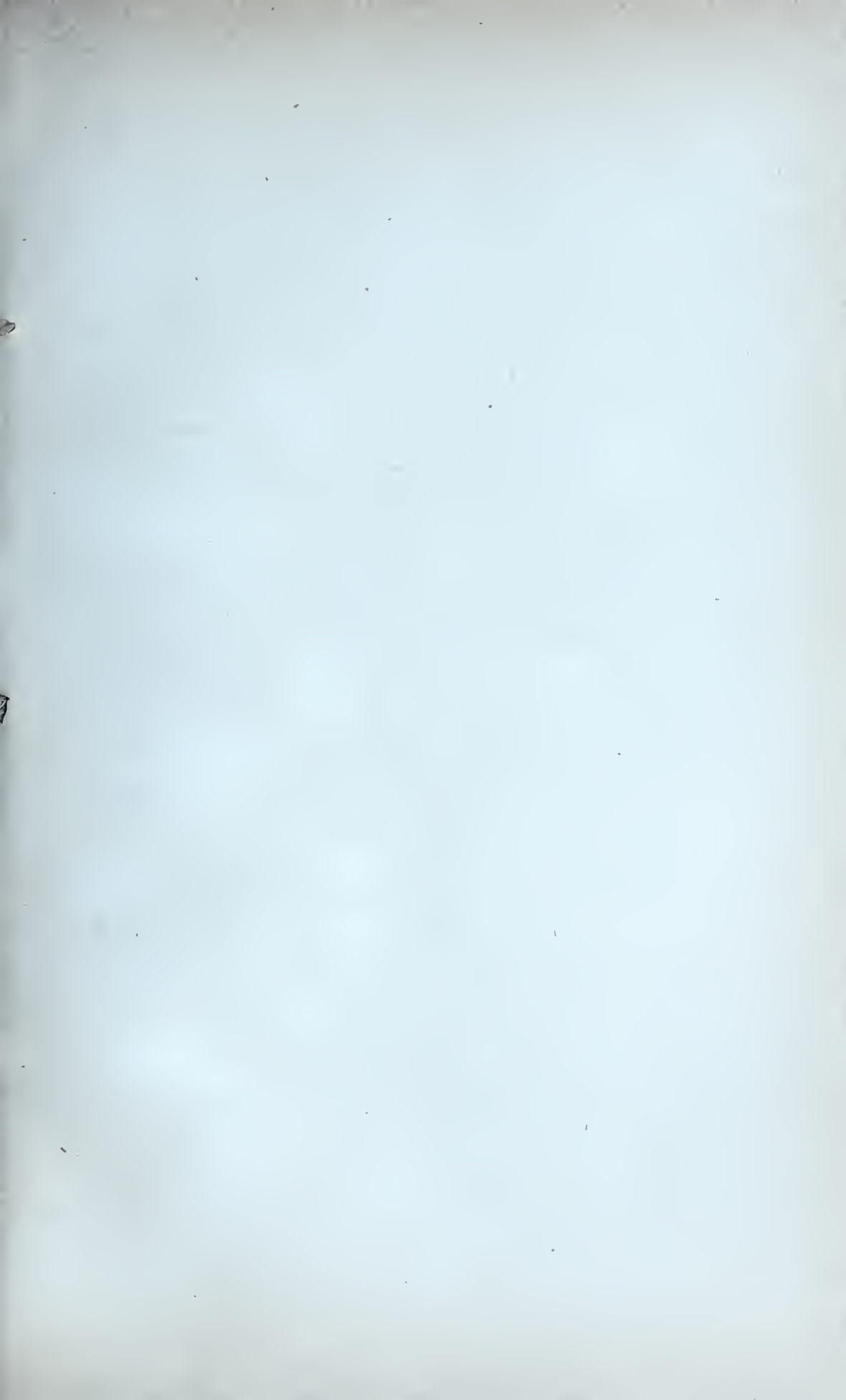
22. The Chief of the Department reserves the right to construe, modify or amend these rules and regulations.

F. J. V. SKIFF,

Chief of Department.

Approved : GEO. R. DAVIS,

Director-General.



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